

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) An alloy comprising, in atomic percent:
at least about 50 atomic percent[[%]] rhodium;
up to about 49 atomic percent[[%]] of a first material, said first material comprising at least one of palladium, platinum, iridium, and combinations thereof;
from about 1[[%]] to about 15 atomic percent[[%]] of a second material, said second material comprising at least one of tungsten, rhenium, and combinations thereof; and
up to about 10 atomic percent[[%]] of a third material, said third material comprising at least one of ruthenium, chromium, and combinations thereof; and
a fourth material, said fourth material comprising at least one of zirconium, yttrium, hafnium, tantalum, aluminum, titanium, scandium, elements of the lanthanide series, elements of the actinide series, and combinations thereof, wherein the fourth material is present in an amount less than 3 atomic percent;
wherein said alloy comprises an A1-structured phase at temperatures greater than about 1000° C, in an amount of at least about 90% by volume.
2. (Previously presented) The alloy of claim 1, wherein a sum of the amount of rhodium in said alloy plus the amount of said first material in said alloy is at least about 75 atomic percent.
3. (Previously presented) The alloy of claim 2, wherein said sum is at least about 85 atomic percent.
4. (Previously presented) The alloy of claim 1, wherein
said second material is present in an amount from about 1 atomic percent to about 6 atomic percent; and
said third material is present in an amount up to about 8 atomic percent, wherein said ruthenium is present in an amount up to about 4 atomic percent and said chromium is present in an amount up to about 6 atomic percent.
5. (Cancelled) The alloy of claim 1, further comprising, in atomic percent,
up to about 3% of a fourth material, said fourth material comprising at least one of zirconium, yttrium, hafnium, tantalum, aluminum, titanium, scandium, elements of the lanthanide series, elements of the actinide series, and combinations of any of the foregoing.

6. (Currently amended) The alloy of claim [[5]]1, wherein said fourth material is present in an amount from about 0.1 atomic % to about 2 atomic %.

7. (Currently amended) The alloy of claim [[5]]1, wherein said alloy further comprises a plurality of oxide particles dispersed throughout said alloy, wherein said oxide particles comprise an oxide of said fourth material.

8. (Original) The alloy of claim 7, wherein said oxide particles are present in said alloy in an amount up to about 5 volume percent.

9. (Currently amended) The alloy of claim [[6]]1, wherein at least a portion of said fourth material is present as a solute dissolved in said A1 structured phase.

10. (Currently amended) An alloy comprising, ~~in atomic percent;~~
at least about 50 atomic percent[[%]] rhodium;
up to about 49 atomic percent[[%]] of a first material, said first material comprising at least one of palladium, platinum, iridium, and combinations thereof;

from about 1[[%]] to about 6 atomic percent[[%]] of a second material, said second material comprising at least one of tungsten, rhenium, and combinations thereof; and

up to about 8 atomic percent[[%]] of a third material, said third material comprising at least one of ruthenium, chromium, and combinations thereof, wherein said ruthenium is present in an amount up to about 4 atomic percent and said chromium is present in an amount up to about 6 atomic percent; and

~~up to about 2% of~~ a fourth material, said fourth material comprising at least one of zirconium, yttrium, hafnium, tantalum, aluminum, titanium, scandium, elements of the lanthanide series, elements of the actinide series, and combinations of any of the foregoing, wherein the fourth material is present in an amount less than 3 atomic percent;

wherein said alloy comprises an A1-structured phase at temperatures greater than about 1000 °C, in an amount of at least about 90% by volume, and wherein a sum of the amount of rhodium in said alloy plus the amount of said first material in said alloy is at least about 85 atomic percent.

11. (Currently amended) An article for use in a high temperature, oxidative environment, said article comprising:

an alloy, said alloy comprising:

at least about 50 atomic percent[%] rhodium;

up to about 49 atomic percent[%] of a first material, said first material comprising at least one of palladium, platinum, iridium, and combinations thereof;

from about 1[%] to about 15 atomic percent[%] of a second material, said second material comprising at least one of tungsten, rhenium, and combinations thereof; and

up to about 10 atomic percent[%] of a third material, said third material comprising at least one of ruthenium, chromium, and combinations thereof; and

a fourth material, said fourth material comprising at least one of zirconium, yttrium, hafnium, tantalum, aluminum, titanium, scandium, elements of the lanthanide series, elements of the actinide series, and combinations thereof, wherein the fourth material is present in an amount less than 3 atomic percent;

wherein said alloy comprises an A1-structured phase at temperatures greater than about 1000 °C, in an amount of at least about 90% by volume.

12. (Previously presented) The article of claim 11, wherein a sum of the amount of rhodium in said alloy plus the amount of said first material in said alloy is at least about 75 atomic percent.

13. (Previously presented) The article of claim 11, wherein
said second material is present in an amount from about 1 atomic percent to about 6 atomic percent; and

said third material is present in an amount up to about 8 atomic percent, wherein said ruthenium is present in an amount up to about 4 atomic percent and said chromium is present in an amount up to about 6 atomic percent.

14. (Cancelled) The article of claim 11, wherein said alloy further comprises, in atomic percent,

up to about 3% of a fourth material, said fourth material comprising at least one of zirconium, yttrium, hafnium, tantalum, aluminum, titanium, scandium, elements of the lanthanide series, elements of the actinide series, and combinations of any of the foregoing.

15. (Currently amended) The article of claim 11, wherein said alloy further comprises a plurality of oxide particles dispersed throughout said alloy, wherein said oxide particles comprise an oxide of said fourth material.

16. (Original) The article of claim 11, wherein said article comprises a component of a gas turbine assembly.

17. (Original) The article of claim 16, wherein said component comprises at least one of a turbine blade, a turbine vane, and a combustor component.

18. (Original) The article of claim 17, wherein said component comprises a coating, and said coating comprises said alloy.

19. (Previously presented) The article of claim 17, wherein said alloy is disposed on at least one component section selected from the group consisting of a leading edge, a trailing edge, and a blade tip.

20. (Currently amended) A component for a gas turbine assembly, said component comprising:

an alloy, said alloy comprising, ~~in atomic percent,~~
at least about 50 atomic percent[[%]] rhodium;
up to about 49 atomic percent[[%]] of a first material, said first material comprising at least one of palladium, platinum, iridium, and combinations thereof;
from about 1[[%]] to about 6 atomic percent[[%]] of a second material, said second material comprising at least one of tungsten, rhenium, and combinations thereof; and
up to about 8 atomic percent[[%]] of a third material, said third material comprising at least one of ruthenium, chromium, and combinations thereof, wherein said ruthenium is present in an amount up to about 4 atomic percent and said chromium is present in an amount up to about 6 atomic percent; and
~~up to about 2% of a fourth material,~~ said fourth material comprising at least one of zirconium, yttrium, hafnium, tantalum, aluminum, titanium, scandium, elements of the lanthanide series, elements of the actinide series, and combinations of any of the foregoing, wherein the fourth material is present in an amount less than 3 atomic percent;

wherein said alloy comprises an A1-structured phase at temperatures greater than about 1000 °C, in an amount of at least about 90% by volume, and wherein a sum of the amount of rhodium in said alloy plus the amount of said first material in said alloy is at least about 85 atomic percent.

21. (Currently amended) A method for making an article for use in high temperature, oxidative environments, said method comprising:

providing an alloy, said alloy comprising, ~~in atomic percent,~~
at least about 50 atomic percent[[%]] rhodium;
up to about 49 atomic percent[[%]] of a first material, said first material comprising at least one of palladium, platinum, iridium, and combinations thereof;

from about 1[%] to about 15 atomic percent[%] of a second material, said second material comprising at least one of tungsten, rhenium, and combinations thereof; and

up to about 10 atomic percent[%] of a third material, said third material comprising at least one of ruthenium, chromium, and combinations thereof; and

a fourth material, said fourth material comprising at least one of zirconium, yttrium, hafnium, tantalum, aluminum, titanium, scandium, elements of the lanthanide series, elements of the actinide series, and combinations thereof, wherein the fourth material is present in an amount less than 3 atomic percent;

wherein said alloy comprises an A1-structured phase at temperatures greater than about 1000 °C, in an amount of at least about 90% by volume.

22. (Cancelled) The method of claim 21, wherein said alloy further comprises, in atomic percent,

up to about 3% of a fourth material, said fourth material comprising at least one of zirconium, yttrium, hafnium, tantalum, aluminum, titanium, scandium, elements of the lanthanide series, elements of the actinide series, and combinations of any of the foregoing.

23. (Withdrawn) A method for repairing an article, said method comprising:
providing an article;

providing a repair material, said repair material comprising, in atom percent,
at least about 50% rhodium;

up to about 49% of a first material, said first material comprising at least one of palladium, platinum, iridium, and combinations thereof;

from about 1% to about 15% of a second material, said second material comprising at least one of tungsten, rhenium, and combinations thereof; and

up to about 10% of a third material, said third material comprising at least one of ruthenium, chromium, and combinations thereof;

wherein said alloy comprises an A1-structured phase at temperatures greater than about 1000 °C, in an amount of at least about 90% by volume; and

joining said repair material to said article.

24. (Withdrawn) The method of claim 23, wherein a sum of the amount of rhodium in said alloy plus the amount of said first material in said alloy is at least about 75 atom percent.

25. (Withdrawn) The method of claim 23, wherein said repair material further comprises, in atom percent,

up to about 3% of a fourth material, said fourth material comprising at least one of zirconium, yttrium, hafnium, tantalum, aluminum, titanium, scandium, elements of the lanthanide series, elements of the actinide series, and combinations of any of the foregoing.

26. (Withdrawn) The method of claim 25, wherein said repair material further comprises a plurality of oxide particles dispersed throughout said alloy, wherein said oxide particles comprise an oxide of said fourth material.

27. (Withdrawn) The method of claim 23, wherein joining comprises disposing a coating onto said article, said coating comprising said repair material.

28. (Withdrawn) The method of claim 27, wherein disposing said coating comprises disposing said coating by at least one process selected from the group consisting of thermal spraying, plasma spraying, HVOF spraying, and laser deposition.

29. (Withdrawn) The method of claim 23, wherein joining comprises at least one of welding, brazing, and diffusion bonding.

30. (Withdrawn) The method of claim 23, wherein said article comprises a component of a gas turbine engine selected from the group consisting of a blade, a vane, and a combustion component.

31. (Withdrawn) The method of claim 30, wherein joining comprises disposing said repair material at at least one component section selected from the group consisting of a leading edge, a trailing edge, and a blade tip.

32. (Withdrawn) A method for repairing a gas turbine engine component, said method comprising:

providing at least one gas turbine engine component selected from the group consisting of a blade, a vane, and a combustion component;

providing a repair material, said repair material comprising, in atom percent,
at least about 50% rhodium;

up to about 49% of a first material, said first material comprising at least one of palladium, platinum, iridium, and combinations thereof;

from about 1% to about 6% of a second material, said second material comprising at least one of tungsten, rhenium, and combinations thereof; and

up to about 8% of a third material, said third material comprising at least one of ruthenium, chromium, and combinations thereof, wherein said ruthenium is present in an amount up to about 4 atom percent and said chromium is present in an amount up to about 6 atom percent; and

up to about 2% of a fourth material, said fourth material comprising at least one of zirconium, yttrium, hafnium, tantalum, aluminum, titanium, scandium, elements of the lanthanide series, elements of the actinide series, and combinations of any of the foregoing;

wherein said alloy comprises an A1-structured phase at temperatures greater than about 1000 °C, in an amount of at least about 90% by volume, and wherein a sum of the amount of rhodium in said alloy plus the amount of said first material in said alloy is at least about 85 atom percent; and

joining said repair material to said component by disposing said repair material at at least one component section selected from the group consisting of a leading edge, a trailing edge, and a blade tip.